



Metropolitan North Georgia Water Planning District

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TO: Local Jurisdictions within the Metropolitan North Georgia Water Planning District (District)

FROM: District Staff

DATE: September 13, 2023

RE: Optional District Guidance About Designs That Embed Post-Construction Stormwater Best Management Practices Within Each Other

The District is providing guidance to local jurisdictions regarding stormwater management system designs that embed post-construction stormwater Best Management Practices (BMPs) within each other.

Background:

At the District's Joint Technical Coordinating Committee (TCC) Meeting in May 2022, the following question was raised: "How are local jurisdictions in the District addressing stormwater post-construction BMP designs that include infiltration practices in the bottom of detention basins?" District staff conducted research, including a survey distributed to all Watershed/ Stormwater TCC members with 40 respondents, and found the following information about current practice within the District.

- In 2022, local jurisdictions within the District have a wide range of responses to designs that include infiltration practices in the bottom of detention basins. Some approve them and other prohibit "embedding stormwater facilities within each other" in their development code.
- 80% of survey respondents had received designs for review that included an infiltration practice at the bottom of a detention basin.
- 42% of survey respondents stated that their jurisdiction has an unwritten, but consistent approach to designs with infiltration practices in detention basins and are evaluated individually and may be approved. An additional 34% had other reference materials (i.e., Georgia Stormwater Management Manual) or local policies that would allow approval.
- 81% of survey respondents requested some form of additional guidance from the District (e.g., optional design guidelines, model ordinance, or minimum standards)

Due to the frequency of designs that include infiltration practices in the bottom of detention basins being submitted to local jurisdictions; the wide variety of responses; and the interest of watershed TCC members in receiving additional guidance, the District is providing this clarifying technical memorandum.

Supporting Documentation

Table 1 identifies constraints in design parameters between infiltration and detention that is currently published in the Georgia Stormwater Management Manual Volume 2 (GSMMv2). The Practices in Table 1 are commonly embedded in stormwater management system designs. Local jurisdictions choosing to prohibit stormwater management system designs that embed post-construction stormwater BMPs within each other may use Table 1 to assess compatibility for the proposed designs.

Design Parameter	Infiltration		Detention
	Bioretention Areas (Practice 4.2)	Infiltration Practices (Practice 4.12)	Dry Detention Basin (Practice 4.5)
Maximum Ponding Depth	12" maximum 9" recommended	12" maximum 9" recommended	None listed, but depth of the basin should not exceed 10'
Site Drainage Area	5 acres maximum	5 acres maximum 2500 sq ft – 2 acres preferred	10 acres minimum
Soils	Native soils if they have at least 0.5 in/hr infiltration ability or engineered media	No C or D Drain in 72 hours	All – with minor adjustments for karst or rapidly percolating soils such as sand
Runoff Reduction Credit	Yes	Yes	No

Table 1: Infiltration and Detention Design Parameter Comparison

In addition, the following text from GSMMv2 identifies constraints to embedding BMPs.

Practice 4.5: Dry Detention Basin

- ...dissipate energy in the stormwater runoff it receives and provide opportunities for some sedimentation of suspended solids. (p. 183)
- Runoff Reduction: Another BMP should be used in a treatment train with dry detention basin to provide runoff reduction as they are not designated to provide RRV as a stand-alone BMP. (p. 185)
- Should be located downstream of other BMPs providing runoff reduction and/or additional treatment of the water quality volume. (p. 186)

Practice 4.2: Bioretention Area

- Generally, have a maximum drainage area of 5 acres or less because of design constraints including limited ponding depths and inlet velocities (p. 156)
- Includes overflow, diversion or bypass structure to safely route larger storms through or around the bioretention area (p. 158)

Practice 4.12: Infiltration Practice

- Infiltration practices are not intended to trap sediment and must always be designed with ...appropriate pretreatment measures to prevent clogging and failure. (p. 246)
- Due to their high potential for failure, these facilities must only be considered for sites where upstream sediment control can be ensured. (p. 246)

Implementation of Guidance

The District's 2019 Model Ordinance for Post-Construction Stormwater Management (2019 Model Ordinance) requires stormwater management systems to first be designed for a runoff reduction standard (i.e., retain the first 1.0 inch of rainfall on the site) rather than the water quality standard (i.e., remove at least 80% of the total suspended solids load for runoff from a 1.2-inch rainfall event). Local jurisdictions implementing a prohibition on designs with embedded practices can maintain flexibility in stormwater BMP designs that meet the requirements of the 2019 Model Ordinance. The local jurisdiction is responsible for the review of land development applications and determination that it is infeasible to apply the runoff reduction standard on part or all of a proposed site development. Using their practicability policy, local jurisdictions may waive or reduce the runoff reduction requirement for proposed site development on a case-by-case basis.

The District's Model Policy on Practicability Analysis for Runoff Reduction (model practicability policy) identifies the site conditions and supporting documentation that could justify a "Determination of Infeasibility." It states that if any of the stormwater runoff volume generated by the first 1.0" of rainfall cannot be reduced or retained on the site, due to site characteristics or constraints, the remaining volume shall be increased by a multiplier of 1.2 and shall be intercepted and treated in one or more BMPs that provide at least an 80 percent reduction in total suspended solids. The following conditions may warrant a Determination of Infeasibility: soil infiltration rate, water table, shallow bedrock, extreme topography, karst topography, hotspots/contamination, historic resources, site constraints, and economic hardship. Local jurisdictions may adopt and customize the model practicability policy and use it in conjunction with their post-construction stormwater management ordinance, which is equivalent or more stringent than the 2019 Model Ordinance.